NRCS
Natural Resources Conservation Service
United States Department of Agriculture

NRCS Technology News

January - February 2003

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Message from the Deputy Chiefs

Lawrence E. Clark and Maurice J. Mausbach

The Natural Resources Conservation Service (NRCS) has increased its involvement in activities that affect the quality of our atmosphere because of the President's Global Change and Clear Skies Initiatives, wording in the 2002 Farm Bill, and the current regulatory environment. A review is underway of approximately 60 current practice standards to add language to address atmospheric resource issues. These revised standards will help us bring technical assistance to producers who wish to voluntarily reduce emissions from agricultural operations.

A human can live for about 6 weeks without food, about 6 days without water, but only 6 minutes without air.

NRCS Technology News is an electronic information piece provided by Science and Technology 10 times a year. It is designed to deliver pertinent information to our customers about new technology, products, and services available from the Soil Survey and Resource Assessment and the Science and Technology deputy areas. ***NRCS Technology News*** is in a format that is available to all NRCS field staff. The January-February issue is also published as a special edition print copy.

Two new practice standards have been released for internal review – Atmospheric Resource Management and Biomass Production. These standards will allow us to give technical assistance for innovative technologies aimed at reducing agricultural emissions and for harvesting biomass to be used for creation of renewable energy or other bio-products. Through the National Water and Climate Center, a variety of atmospheric data are collected that help producers and us manage resources and plan cropping activities more aggressively in reaction to anticipated shortages or abundances of water or extreme climatic conditions.

Why are we talking about the *atmospheric resource*? Why not call it *air quality*? The reality is that the activities that producers and we are undertaking affect more than just the air we breathe. The emissions regulated by the Environmental Protection Agency are regulated because of their direct impact on human health. However, greenhouse gases are of international concern, and there is support for production of bio- and renewable fuel sources with CO_2 emissions lower than that of fossil fuels. These factors affect the levels of atmosphere above those that contain the air we breathe and are believed to be responsible for changes in the ozone layer. Therefore, as NRCS becomes further involved in these activities, we no longer talk merely about air quality; we talk about management of activities affecting our atmospheric resource.

Why are we talking about the *atmospheric resource?* Why not call it *air quality?*

The reality is that the activities that producers and we are undertaking affect more than just the air we breathe.

The further involvement in atmospheric resource activities mentioned above includes recommendations made at the Air Quality Workshop in St. Louis in November. These recommendations augment an atmospheric resource strategy that is already being pursued, which includes actions in the areas of technology development, research, technical guidance, expanding partnerships, policy development, accountability, training, and strategies for future engagement. Technology development includes the review of gaps in available tools–such as odor risk assessment, particulate matter prediction, and development of incentives for greenhouse gas abatement--and a decision about which opportunity to pursue. The research actions include the coordinated development of a plan for how Agency research needs will be met.

We are working on technical guidance, including the update of handbooks, preparation of technical notes, revision and development of practice standards to address atmospheric resource concerns (planned completion in May), and publication of the workshop proceedings on the Web and on CD (January completion). NRCS personnel will be encouraged to expand and create new partnerships to increase our knowledge base, as well as to share our activities with state air quality regulators so that they can better work with producers. Our personnel will also be encouraged to help producers become more active in communications with state regulators in order to bridge gaps. A draft of Agency atmospheric resources policy is expected to be ready for review this spring; other policies are being examined for gaps or needed updates. We will be developing a plan to ensure accountability for work done to improve the quality of the atmospheric resource. The training part of the strategy includes the revival and update of the air quality course and the development of other courses necessary to prepare Agency personnel to respond more aggressively to producer demands for assistance in this area.

This is a brief sketch of a lengthy and detailed strategy that the Agency will undertake in the coming years. We will keep the Agency apprised as different parts of the strategy are achieved.

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If you have any questions about the atmospheric resource strategy, please contact Beth Sauerhaft at (202) 720-8578

Conservationist's Corner

Gary Mast, President-elect, National Association of Conservation Districts

As President-elect of the National Association of Conservation Districts, I am proud of our members' work to help make the 2002 Farm Bill a landmark for conservation in this country. In addition to strengthening and expanding existing progams, the legislation offers new opportunities to those of us dedicated to protecting and conserving America's private working land resources.

As background, in 1994 the United States Department of Agriculture transferred and increased the responsibilities for administration of conservation programs to the Natural Resources Conservation Service (NRCS) to provide technical and financial assistance to producers to improve the natural resource conditions of their land. The 1996 Farm Bill further increased the Agency's responsibilities. The Farm Security and Rural Investment Act of 2002 (the "2002 Farm Bill") expanded the availability of financial and technical assistance funds for the implementation of conservation programs.

The current staffing levels of NRCS are insufficient to adequately meet the increased need for technical assistance under the conservation programs authorized or re-authorized by the 2002 Farm Bill. The legislation, therefore, expands the availability of technical assistance to producers by encouraging other potential providers of technical assistance to assist in the delivery of technical services. Known as the Technical Services Provider (TSP) initiative, it allows producers to receive conservation technical assistance from both public and private sector sources.

Although the TSP concept is new to many people, it is not new to The Conservation Partnership. Conservation districts have been supplementing NRCS technical assistance for more than 40 years by providing technical services to landowners and operators and coordinating private sector services. We are working hard to ensure that everyone understands that the TSP initiative is intended to help close the workload gap and to supplement the technological base and delivery system currently in place. The purpose of the TSP is not to reduce or eliminate it.

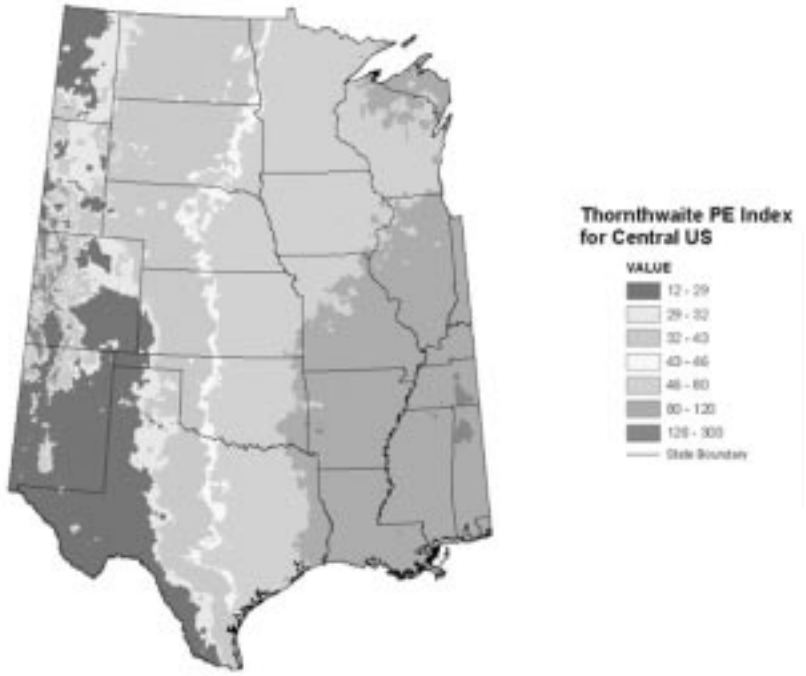
To ensure that high quality technical services are available to all producers, the Farm Bill requires NRCS to establish a certification process under which NRCS will evaluate and approve individuals, entities, and public agencies as eligible to provide conservation technical services for certain conservation programs. NRCS will only make payment to a producer for technical services obtained from a technical service provider that has been certified by NRCS to provide such assistance. The Agency will also determine the process and causes under which a technical service provider may become decertified and, therefore, ineligible to provide technical services.

Conservation districts are in a unique position to help get the TSP effort started. We already have trained and certified employees who deliver technical assistance to producers. We have been working with private sector technical assistance providers for years and are anxious to help this expanded initiative be a success. We encourage districts to work with their NRCS state conservationist relative to the development of the statewide TSP program and to keep current regarding the activities of other groups. Given the magnitude of the tasks, there is no doubt that there will be a role for every qualified provider to play. We are ready, willing, and able to do our part.

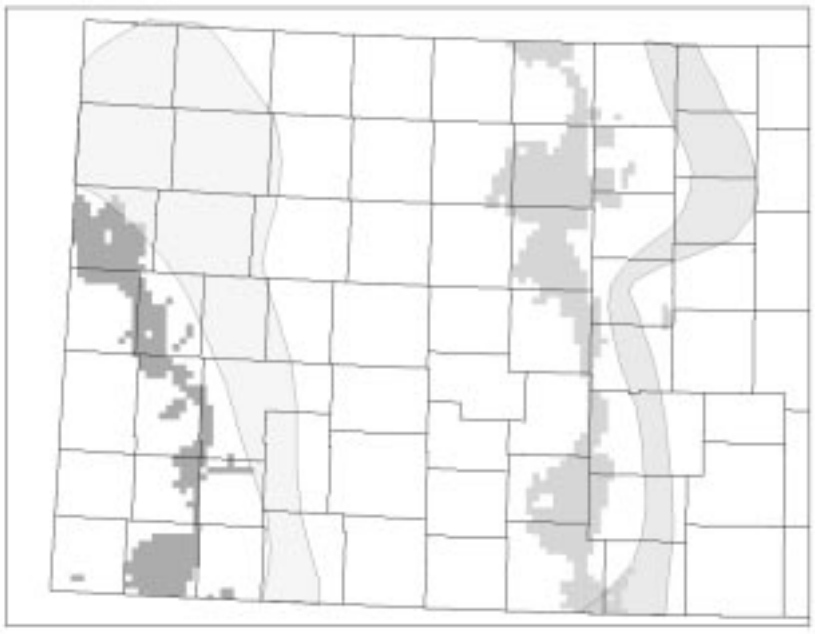
New Products and Services

Improved Climate Map Products Result from Technological Advances

Over the past several years, climate concepts and methodologies have been greatly enhanced with new knowledge, data, and technologies, launching the Natural Resources Conservation Service (NRCS) into a premier position in the understanding and use of climatic information in natural resource applications. At the forefront of these efforts has been nearly 10 years of collaborative work to map climate by the National Water and Climate Center (NWCC) and the Spatial Climate Analysis Service at Oregon State University. Baseline mean monthly and annual precipitation and temperature maps of every part of the United States, as well as many specialized products for NRCS use, have been developed using a powerful tool – the Parameter-Regression on Independent Slopes Model (PRISM). These climate map products are now the official baseline climate maps in the National Oceanic and Atmospheric Administration's (NOAA) new Climate Atlas of the U.S., as well as the standard set of climate maps used by NASA, NOAA, and other agencies in the U.S. Global Change Research Program. The maps also serve



The new Thornthwaite Precipitation Effectiveness Index Map of the central U.S. based on the 4 km resolution mean monthly precipitation and temperature products from the NRCS PRISM Project.



A comparison of newly defined PRISM PE Index regions to those of the 1957 hand-drawn PEI map over western and central Kansas.

as foundational spatial information that will be used in many of the new and continuing programs contained in the 2002 Farm Security and Rural Investment Act (Farm Bill), such as for the determination of wetlands in the Wetlands Reserve Program.

Examples of the integration of these new climate map products into NRCS programs include their use in the National Resources Inventory (NRI), the Web-based VegSpec program, and mapping and classifying soils. For VegSpec – a tool for site-specific plant selection – high-resolution maps of precipitation and temperature were developed using PRISM, including special maps like the 1-, 2-, and 3-in-10 year extreme winter minimum temperature. A transparent process within VegSpec extracts climate data for a user-selected location, which are then combined with other user-supplied information to determine adaptive plant species for the location of interest.

Thornthwaite's Precipitation Effectiveness Index (PEI) has been used in the Plains States for nearly 50 years to help classify soils and potential vegetation. A new digital PEI map of the Central U.S. was developed (page 4) using the new PRISM digital mean monthly precipitation and temperature maps. Users found that over much of the Southern Plains the new PEI lines were shifted westward slightly, better matching ground observations than did the older hand-drawn maps and reflecting slightly wetter conditions during the most recent 20 years (page 4). The new PEI map was developed by the National Cartography and Geospatial Center and the NWCC and has provided the impetus for the preparation of more specialized climate map products to replace older (and, in most cases, hardcopy) information.

All of these climate map products are digital and Geographic Information System (GIS) compatible. Therefore, with GIS desktop capability a reality in many NRCS field offices, the opportunity exists for their quick adoption into everyday activities. Plans are in place for more and innovative climate map products, including maps of snow water equivalent in the West – perhaps updated at least monthly for more accurately estimating water supply and drought potential. Plans are in development for new mean monthly precipitation and temperature maps based on the latest 1971 to 2000 normals period.

For an overview of the project, and links to all available climate layers and many applications (including VegSpec and the Thornthwaite PE) visit: http://www.wcc.nrcs.usda.gov/water/climate/prism/prism.html

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Plant Biotechnology Facilitates Adoption of Conservation Tillage

"Conservation Tillage and Plant Biotechnology: How New Technologies Can Improve the Environment by Reducing the Need to Plow," a study recently released by the Conservation Technology Information Center (CTIC) in Indiana, documents the many benefits of conservation tillage, especially no-till, and the linkage with bioengineered herbicide-tolerant soybeans and cotton.

In 2002, 75 percent of the soybeans and 58 percent of the cotton acres in the U.S. were planted with herbicide-tolerant varieties. Since the introduction of herbicide-tolerant soybeans in 1996 and herbicide-tolerant cotton in 1997, no-till has grown 35 percent and 300 percent, respectively, in these crops. Growers are more likely to adopt no-till when they have confidence in effective weed control; biotechnology has helped facilitate this adoption.

The study, co-authored by the NRCS natural resources specialist liaison to CTIC and an independent crop consultant from Iowa, was released in October at the World Food Prize Symposium in Des Moines, Iowa. The publication can be viewed on line at http://www.ctic.purdue.edu/CTIC/Biotech.html. Copies can be ordered from CTIC by calling (765) 494-9555.

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New Selections Effective for Mineland Reclamation in Intermountain West

Finding plants to grow on sites impacted by mining activities can be extremely challenging because of the presence of acidic conditions and heavy-metal laden soils. However, the Plant Materials Center at Bridger, Montana, has risen to the challenge with three new plant releases.

Old Works Germplasm fuzzytongue penstemon, a native perennial wildflower, has potential for dryland revegetation and xeriscaping.

Washoe Germplasm basin wildrye is a cool-season native perennial grass originally collected from a defunct smelter site in Montana. Soil levels of arsenic, cadmium, copper, lead, and zinc ranged from moderate to highly phytotoxic and soil pH ranged from 4.6 to 5.6. The selection outperformed 'Trailhead' and 'Magnar' basin wildryes in tests on low pH and heavy-metal soils and is an excellent soil stabilizer and wind barrier.

Prospectors Germplasm common snowberry is a native deciduous shrub collected near the same smelter site. It was selected for its adaptation to moderately acidic and heavy-metal contaminated soils. The shrub's densely branched root system makes it an excellent soil stabilizer. Common snowberry is also an important food, nesting, and cover plant for many Western U.S. game animals and songbirds.

Old Works Germplasm fuzzytongue penstemon, a third plant collected from the smelter site, is a native perennial wildflower. Its purplish blossoms appear in late spring through

early summer, and the plant is adapted to acidic, loamy or sandy soils with moderate heavy-metal contamination. This selection of fuzzytongue penstemon has great potential for dryland revegetation and xeriscaping.

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Sustainable Agriculture Technical Notes Support Farm Bill Provisions

The non-commodity titles of the 2002 Farm Security and Rural Investment Act have new provisions that can help farmers' transition to a more sustainable system of agricultural production and help rural communities enhance their quality of life. Many of these provisions are in the Conservation Title and the Rural Development Title. They range from protecting farmland to providing funds for marketing value-added organic products.

The Watershed Science Institute (WSSI) anticipated increased interest in the arena of sustainable agriculture and has been working for several years on assembling a series of technical notes to provide insight on a particular aspect or approach to sustainable agriculture. These notes are especially timely to support the intent of the Farm Bill by providing field offices and partners with relevant information. This series of technical notes is found in the Field Office Technical Guide, Technical Note Binder, Ecological Sciences (Title 190), Agronomy section. Each technical note in the series includes definitions, principles, and planning tools and then uses several geographically diverse case studies to illustrate practical examples of the principles described. The first three technical notes in the series are posted on the Watershed Science Institute Web site, http://www.wcc.nrcs.usda.gov/watershed.

The status of the technical notes follows.

1) Sustainable Agriculture: an introduction to sustainable agriculture and what it means to NRCS Status: published; available on the Web.
(2) Making the Transition to Sustainable Agriculture: the processes involved and things that should be considered when making the transition to sustainable agriculture. Status: published; available on the Web.
(3) Low Cost Opportunities for Precision Farming: the concepts involved in precision farming and how they can be implemented without the use of expensive equipment or powerful computers. Status: Draft available on the Web.
(4) Marketing Tips for Sustainable Agriculture: innovative products and marketing strategies for small farms with an emphasis on direct marketing. Status: final draft.
(5) Agroforestry for Sustainable Agriculture: agroforestry and how it can be used to enhance ecological, economic, and social functions of farms. Status: peer review.
(6) Grazing-based Dairy Systems: the benefits of grazing-based dairy systems, how they function, and how to implement them. Status: first draft.

Other technical notes planned for the series include Energy Conservation for Sustainable Agriculture, Culturally Important Crops, On-farm Research to Support Sustainable Agriculture, and The Role of Community in Sustainable Agriculture.

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Technological Advances

Plant Materials Technology Enhances Conservation Reserve Program

With a new Farm Bill in place and many landowners wanting to re-enroll acreage in the Conservation Reserve Program (CRP), eligibility may be contingent on environmental factors, such as enhancement of existing stands with wildflowers and legumes. Addition of these broadleaf species improves stand diversity and provides greater wildlife benefits.

Successful enhancement of existing CRP land requires up-to-date seeding information, and a multi-year study by the Plant Materials Center (PMC) at Manhattan, Kansas, has met this need. The PMC, in cooperation with Kansas State University, examined the effect of several pre-planting treatments (mowing, light disking, burning, chemical spraying) and planting methods (drilling and broadcasting in spring and fall) on the establishment of native and introduced forb and legume species in existing CRP stands. In southwest Kansas, test plantings were established on silt loam soil receiving an average of 16 inches annual rainfall and were evaluated over a 3-year period.

While the seeded introduced species generally decreased in density over time, native species in the study increased in density by the end of the third year. For the native species tested, shallow disking in the spring followed by drilling generated the most seedlings. Spring disking followed by drilling and broadcast seeding and burning followed by drilling were most effective for establishing introduced species.

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Technology Transfer

Joint Efforts with Technical Specialists Improve Transfer Capacity

Joint efforts among Institutes and technical specialists help to fill a void in the capacity to provide States with assistance and training. Social Sciences Institute (SSI) staff has enlisted state and regional social scientists to serve on technical committees, develop technical notes, provide training, and review other technical documents. The development of some SSI materials and training for locally led conservation planning, community surveys, technical notes, and civil rights issues has included working closely with regional and state social scientists.

For example, Northern Plains sociologist Kathie Starkweather, one of the “field based” sociologists in the Agency, developed the PowerPoint presentation “Unconscious Discrimination” that addresses diversity issues facing NRCS employees when interacting with one another as well as with customers. The presentation developed from her research analysis that was done to assist regional RC&D Councils. She delivered this presentation at several State employee meetings, as well as the National Civil Rights Conference, in Seattle, Washington.

For her region, Starkweather also customized the Social Sciences Institute training module "Preparing to Work with Underserved Audiences" in the "Developing Your Skills to INVOLVE COMMUNITIES in Implementing Locally Led Conservation" series. She created a PowerPoint presentation that transfers "Outreach Training Tools." SSI materials in a variety of topic areas, such as listening skills, environmental justice, cultural patterns, and understanding differences, were used by Starkweather as part of a training package that assisted field personnel with development of their own successful outreach programs.

Starkweather has made several presentations to leadership groups in the Northern Plains and is receiving invitations from other regions.

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Newsletter Spotlights Fall Planting Concerns of Warm-Season Grass

Planting native warm-season grasses is a relatively new conservation practice in the East Region. Interest is growing for fall planting of seed to maximize planting opportunities.

An article on how warm-season grass growth differs from cool-season grass growth and why fall plantings are generally not recommended at this time appears in the latest issue of "Plants Northeast" (September, 2002), a Plant Materials Program publication. While planting

The latest issue of "Plants Northeast" spotlights fall planting concerns of warm-season grasses such as Niagara big bluestem shown above. "Plants Northeast" is a Plant Materials Program publication.

preferentially occurs in the spring in order to capitalize on the growth strategy of warm-season grasses, the limitations of a relatively short spring planting season and the scarcity of native grass drills in the region have conservationists considering the feasibility of fall planting. Current studies at the Plant Materials Centers in Cape May, New Jersey, and Big Flats, New York, as well as field trials underway in Pennsylvania, may result in fall planting methods becoming an accepted option in the future.

Warm-season grasses enhance wildlife value, have aggressive and deep root systems, and can be used for forage and biofuel production. Their utility in the Wildlife Habitats Incentive Program (WHIP), Wetlands Reserve Program (WRP), Conservation Reserve Program (CRP) and Environmental Quality Incentives Program (EQIP), and the high Environmental Benefits Index (EBI) in CRP, have accelerated their use.

To receive the Plants Northeast newsletter, contact Carmen Chavez at carmen.chavez@ny.usda.gov.

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Watershed-Scale Wildlife Corridors in Agriculture Landscapes Studied

A case study to test the principles and methodologies presented in the NRCS technical handbook "Conservation Corridor Planning at the Landscape Level: Managing for Wildlife Habitat" is a project of the NRCS Watershed Science and Wildlife Habitat Management Institutes together with Utah State University. This case study is being prepared to benefit NRCS field office personnel and their partners working on watershed-scale wildlife corridor planning projects in agriculturally dominated landscapes.

The study area is a 40-mile stretch of the Snake River's Henry's Fork in southeastern Idaho. Conservation of open space, agricultural resources, and fish and wildlife habitat along this corridor has been the focus of several non-profit organizations and government agencies, including the NRCS, for many years. This portion of the river flows through privately owned ranch land and productive wheat, barley, and potato farms. Known for its scenic quality and world-renowned fishery, this area provides habitat for trumpeter swans, bald eagles, waterfowl, mule deer, whitetail deer, moose, and a diversity of other wildlife.

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Use of Silvopasture Systems is Gaining Momentum

Silvopasture is an agroforestry practice that combines trees with forage and livestock production, optimizing the yield of both enterprises. In the past few years the demand for and recognition of silvopasture has grown tremendously, especially in the pine forests of the Southeastern United States. In the Southern States, pine and forage systems composed of both cool- and warm-season grasses are being successfully blended on the land. This growth is due to several factors, among which are the numerous silvopasture workshops conducted in the Region. In fiscal year 2002, the National Agroforestry Center and its conservation partners provided technical training to over 300 natural resource professionals and landowners, including staff from NRCS, State and County Extension, State forestry and conservation agencies, conservation districts, non-government organizations, and private consultants. In addition, specific efforts have been made to train

faculty at the 1890 Universities with workshops designed to enable faculty to incorporate agroforestry technology into their teaching, research, and extension efforts. This year 27 individuals participated, including faculty from 12 of the 18 1890 Universities.

Two cost-share programs in the new Farm Bill–Environmental Quality Incentives Program (EQIP) and Forest Land Enhancement Program (FLEP)–can now be used to foster the adoption of silvopasture. One benefit of silvopasture is that it gives the landowner the potential to diversify on-farm income by providing for an annual income from grazing, while trees are grown for long-term profits. Another benefit is that managed silvopasture systems are at a low risk for catastrophic fire because of low understory fuel loads and low stocking density of trees keeping wildfire risk to a minimum. In addition, regional markets continue to expand as silvopasture sawlogs produce high quality veneer and sawtimber.

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Workshops provide technical training in silvopasture to natural resource professionals, landowners, and university faculty.

Silvopasture combines trees with forage and livestock production, optimizing the yield of both enterprises.

Training

Go FISH!ing This Spring with *The Leader in You*

Fishing for ways to invigorate your locally led conservation team? If so, plan to catch "FISH! Sticks . . . Keeping the Vision Alive" on May 15 from 1:00 to 3:00 p.m. e.t. This satellite seminar is sponsored by ***The Leader in You*** program. Satellite coordinates and handouts will be available by May 1, 2003.

Affecting change in an organization is "a piece of cake" compared to the challenge of getting change to stick, states writer, filmmaker, and trainer, Dr. Steve Lundin. After all of the training sessions, motivational talks, special events, posters, and newsletter articles that so often accompany a large scale change, there is a need to shift from externally generated energy to natural energy. "FISH! Sticks" introduces the commitments necessary to get FISH! or anything worthwhile that requires commitment to stick. Lundin will discuss how to put the commitments into practice to maintain and renew that which we work so hard to create.

About the trainer
Dr. Steve Lundin is the author of "FISH!," "FISH! Tales," and "FISH! Sticks," which was released in
January 2003. His best selling book "FISH!" has been a Wall Street Journal, New York Times, and Business Week business best seller
for over 2 years. Lundin has been an adjunct professor of business, think tank executive, camp director, national sales manager, hockey rink supervisor, business school dean, dishwasher, business owner, and golf caddy.

The Leader in You program, sponsored by the Social Sciences Institute (SSI), is designed to support the locally led conservation aspects of the Farm Bill and the President's Management Agenda. This satellite seminar is brought to you by SSI and the National Employee Development Center in cooperation with the National Association of Conservation Districts, the National Association of State Conservation Agencies, National Conservation District Employees Association, and the Federal Training Network.

Dr. Steve Lundin's best selling book, "FISH!," has been a Wall Street Journal, New York Times and Business Week business best seller for over 2 years. Lundin will be the featured presenter in the May 15, 2003, *The Leader in You* satellite seminar.

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Soil Geomorphology is Focus of Soil Science Institute II

The 2002 Soil Science Institute II (SSI II) was hosted in early fall by New Mexico State University (NMSU) at Las Cruces. The SSI II focused on soil geomorphology, with a balance between field and classroom study. Soil geomorphology can explain soil patterns and landform age, both critical Soil Survey concepts. Las Cruces is a unique area for soil geomorphology training because the vicinity served as a 400 square-mile field area for the "Desert Project," a major cooperative research effort from 1957 to 1972 that studied arid soils, geomorphology, and landscapes. Research and benefits continue today through follow-up studies by faculty and students at NMSU. Beyond the Desert Project, additional New Mexico field sites for SSI II included the Black Mountains, White Sands, and Kilborne Hole.

Similar to the traditional Institute, SSI II was a 4-week intensive training course. Participants included 33 NRCS employees, predominantly soil scientists, from 22 states and Puerto Rico. Three original Desert Project personnel contributed to the training: John Hawley, NM Bureau of Mines and Mineral Resources, retired; Lee Gile, NRCS, retired; and Robert Grossman, National Soil Survey Center (NSSC).

The Soil Science Institute will assume the traditional content next year and be held at Washington State University. Plans

Instructors and 33 NRCS employees, predominantly soil scientists from 22 states and Puerto Rico, participated at the Soil Science Institute II, a 4-week intensive training on soil geomorphology that was hosted by New Mexico State University (NMSU) at Las Cruces. Instructors came from NMSU, North Dakota State University, University of Missouri, New Mexico Tech, and the National Soil Survey Center.

are to return to a soil geomorphology focus every other year. Major soil geomorphology projects, like the Desert Project, also occurred in Iowa, North Carolina, and Oregon. One of these project areas may be used in 2004.

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"The decisions we make today and the work we do now will help us deliver new science and technology applications to meet the needs of the future.The progress we make in science and technology will help our employees, our partners, and our customers put the Farm Bill to work on the land."

Bruce I. Knight, Chief

Honors

Clark Receives Public Service Award

Lawrence E. Clark, NRCS Deputy Chief for Science and Technology, was presented with the 2002 George Washington Carver Public Service Hall of Fame Award from the 60th Annual Professional Agricultural Workers Conference on December 10 at Tuskegee University. Clark was honored for "creative vision in bringing practical help to small farmers worldwide and particularly to the 1890 land-grant community in capacity building, research support, and student work opportunities."

Lawrence E. Clark, Deputy Chief for Science and Technology, NRCS.

Web-based Technology

PLANTS Fills Some Data Gaps at County Level

County level distributional data for all states, except Alaska, Maryland, Mississippi, Ohio, and Texas, are being integrated into PLANTS by the National Plant Data Center. These distributional data reflect vouchered occurrences from those counties – occurrences where plant identification is supported by herbarium specimens that can be verified. New county occurrences based upon vouchered specimens or specimens identified from scientific literature can be submitted for validation through the Distribution Update on the PLANTS home page. If a new county record has been observed, a lead can also be submitted through the Distribution Update. (For more information about plant collecting and herbaria, visit <plants.usda.gov,> select Links, select Educational, select Plant Collecting and Herbaria.)

With field assistance, a better understanding will develop of plant distribution in the U.S., the spread of weedy species can be more closely monitored, and knowledge will be gained about what species grow best in what county. This information will

assist the field in providing more accurate and scientifically credible conservation recommendations for Farm Bill programs and will assist with field inventories.

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More Plant Images Available

Over 8,000 new images are being integrated into PLANTS by the National Plant Data Center. They will be available at both the Gallery and Plant Profiles for individual species to assist with identifying plants and communicating to customers. These images will be invaluable in providing conservation assistance, such as identifying conservation and invasive plants, communicating to users about a particular species, or developing fact and job sheets.

Major new additions are 4,300 line drawings scanned from Britton & Brown Illustrated Flora (1915) in cooperation with the Kentucky Native Plant Society. A retired NRCS staff member from Nevada, Gary Monroe, has also made major photo contributions to the Gallery.

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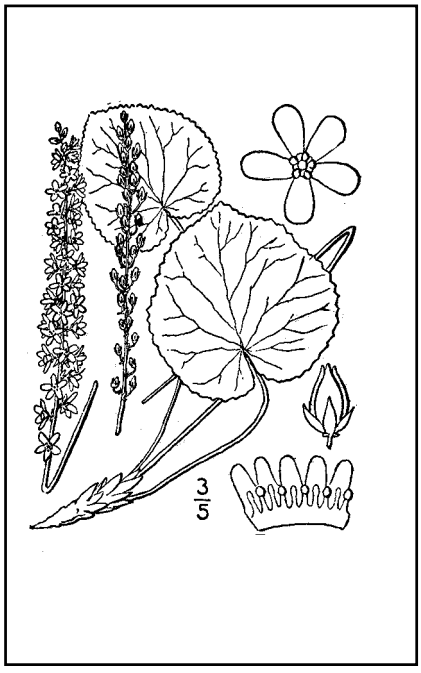
Bach's calicoflower - *Downingia bacigaluipii* Weiler

Copyright Gary A. Monroe.



Beetleweed–*Galax urceolata* (Poir.) Brummitt
From Britton & Brown (1915)

NRCS Technology News

NRCS Science and Technology Consortium staff should send information for ***NRCS Technology News*** to:

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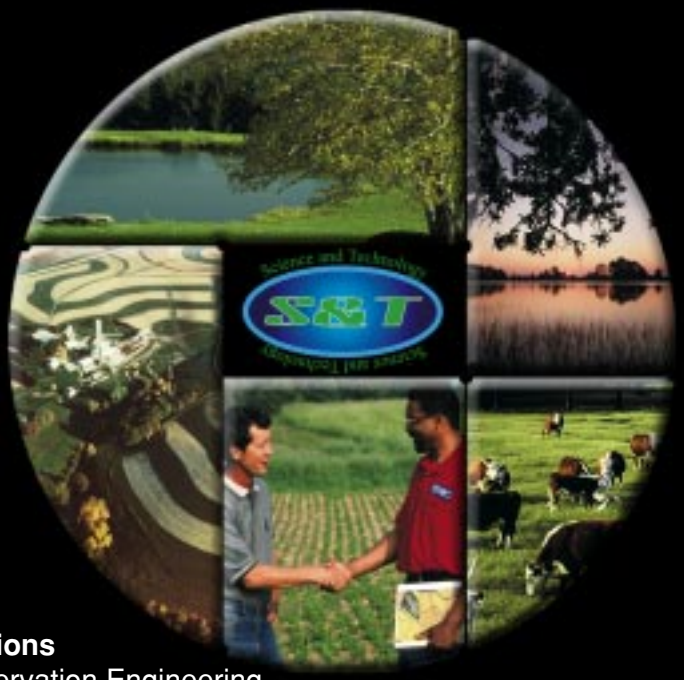
Conserving Private Lands Through Science and Technology



Divisions
Conservation Engineering
Ecological Sciences
Resource Economics and Social Sciences
Resources Inventory
Soil Survey

Institutes
Grazing Lands Technology
Natural Resources Inventory and Analysis
Social Sciences
Soil Quality
Watershed Science
Wetland Science
Wildlife Habitat Management

Centers
National Agroforestry
National Cartography and Geospatial
National Design, Construction, and Soil Mechanics
National Plant Data
National Plant Materials
National Soil Survey
National Water and Climate
National Water Management